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Sixteen Mexican-American 4-year-olds, classified as culturally disadvantaged, were administered a special program in an attempt to teach them the concept of adjectival comparatives in a short time. The children were divided into two treatment groups. One, the inductive or "discovery" group, was shown a picture of an object (for example, a pig) and a comparative picture (perhaps a fatter pig) and asked to echo the instructor's statements as he pointed to the appropriate picture. The second group, the deductive group, were provided with a rule for forming the comparative and were also shown the pictures. Ten comparatives were taught to the children over a 3-day period. Each child received a pretest and posttest involving some of the same 10 comparatives used in the program. The tests were the same, requiring the child to select the picture of the comparative object and state the comparative. The children were also administered a transfer test, similar to the other tests, but using five untaught comparatives. The children were retested 6 months later. The test results indicated that language-handicapped children can learn this particular task quickly. No significant differences were found between the performance of the two treatment groups. (WD)

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COMPETENCE VS PERFORMANCE IN YOUNG CHILDREN'S USE OF
COMPLEX LINGUISTIC STRUCTURES¹

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The focus on school integration has sharpened public awareness of the fact that children from lower socioeconomic backgrounds are at a severe handicap in readiness for school as compared to their middle class peers. The middle class five year old brings with him a variety of language skills and basic concepts that prepare him for building a solid foundation for the future twelve years of school and beyond. This is not so for the disadvantaged child where the phenomenon of cumulative deficit and the restricted language of the ghetto has been amply documented. (Bernstein 1962, John & Goldstein 1964, etc.).

Linguists, on the other hand, maintain that the child is born with "a set of procedures and inference rules that he uses to process data" (Smith & Miller, 1966). Fodor (1965) states that "linguistic universals are the result of an innate cognitive competence rather than the control of such a competence." Whatever the merits of this controversy, it is abundantly clear that ghetto children lack facility in the use of certain basic language structures. One simple area of deficit is in the production of adjectival comparatives. The present study is an attempt to investigate whether these children can be taught to produce such comparatives and whether providing a rule for the formation of the regular form of the comparative will be more effective than repetition and practice with appropriate materials.

When the child begins his formal schooling, in most cases his teacher will present him with new knowledge through teaching methods designed to induce deductive behavior. The majority of laboratory experiments use

the teaching methods calling for response through inductive behavior, which enables the subject to "discover" the rule. Gagné (in Underwood & Richardson, p. 232) feels that self discovery is better because it fits into the subject's existing verbal system, but unfortunately the elementary teacher is held to a time limit and the discovery method could take days. The merits of inductive and deductive instructional procedures have been tested in a plethora of research studies concerned with the "discovery" hypothesis. A review of this literature can be found in Stern (1964).

Concept learning has been investigated in the psychological laboratory, but the findings are of small help to the teachers teaching concepts. However, the bulk of the research has been carried out with more sophisticated learners. In the present investigation, deductive versus inductive procedures for teaching comparatives were tested in school settings.

HYPOTHESIS

The major hypothesis of this study was that children from disadvantaged language environments, who do not produce comparatives in situations which would normally elicit this linguistic structure, can be taught to produce comparatives on a posttest after a brief instructional program. A supplementary hypothesis was that the group which was given a rule for forming comparatives will be superior on the posttest to children given only practice in the use of the appropriate terms.

METHOD

Subjects In the first phase of this study, 16 Mexican-American four-year-old children in the Los Angeles Children's Centers were given the Peabody Picture Vocabulary Test and assigned, on a stratified random basis, to

two treatment groups. Table 1 includes the means and S.D.'s on this measure. No statistically significant difference in mental ability between these groups was found.

Treatments To test the hypothesis as to the most effective instructional procedure, two experimental treatments were used. In the first treatment, the Inductive or "discovery" group were shown the pictures representing an adjective and its comparative and were asked to echo the correct statements, e.g. "This pig is fat...This pig is fatter," as the examiner pointed to the appropriate picture.

The second treatment provided a rule for forming the comparative. Thus, the children in the Deductive group were told, "When there is more of something, we say the word and then we say, '-er.' Say, 'er'. This pig is fat, but this pig is fatter. Say 'fat.' Say 'er.' Now say 'fatter'."

Procedure Before beginning the experimental training, 45 comparatives were tried out with 40 children from a similar population. Of these, 15 of medium difficulty were selected. Only 10 of these were used in the pretest and posttest and taught in the program. The remaining five were used for the transfer test.

There were two pictures placed side by side on an 8 X 10 paper representing the contrasting adjective and comparative. The subjects listened and responded to taped commentary as the examiner pointed to the pictures indicated on the tape. Two different pictorial examples were given for each comparative taught. Three comparatives were taught the first day, three were taught the second day, and four were taught the last day. (Figure 1 is an illustration of the type of material used in both

training and tests.)

On the first day the children were individually administered the Peabody Picture Vocabulary Test and a pretest. On the following three days, the instructional program was given to groups of four children. On the fifth day, the posttest and the transfer test were given.

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Criterion Tests The same test was used for both the pre- and posttests, and required two kinds of responses. The first response was the selection of the appropriate picture, the second response was the production of the comparative. For the selection response, the child was shown a picture representing the adjective and the comparative and was asked to point to the picture for the comparative. E.g. shown a picture of two pigs, he was told to point to the "fatter" pig. After the selection part of the test was completed, the child was shown all of the same pictures over again, but this time the examiner said, "I'm going to tell you about one of these pictures and you tell me about the other." The examiner then pointed to the picture of the pig representing the comparative.

The transfer test followed the same procedure with the five untaught comparatives.

Results Table 1 presents means and standard deviations on the selection and verbal subtests as well as total pre and posttest for the two groups. While there was no significant difference between the Inductive and Deductive instructional procedures, there were significant pre-post gains (.01 level) for both groups on the verbalization task. Analysis of covariance,

with pretest as covariate, demonstrated no statistically significant differences between the treatment groups.

The transfer test included two instances for each of the five untrained comparatives, giving a possible score of 10 points. On this test, the Deductive group obtained a mean of 7.0 and the Inductive group a mean of 5.0. Again, the difference between the groups was not significant, although the raw scores clearly favored the group given the rule during instruction.

Six months later, the same children were tested. For both groups, the performance on this test was not reliably different from that of the immediate posttest (see Table 1), showing an unusually high degree of retention. To determine whether proficiency in this skill would have appeared without training or simply as an effect of maturation or experience over the six month period, another group of children from the same population and the same age as the experimental group at the time of the retention test, were given the same test. The performance of these children was similar to that achieved on the pretest by the experimental group when they were six months younger, indicating little change over time for this type of linguistic skill.

DISCUSSION

The major hypothesis of this study was supported. There was ample evidence that language-handicapped children could, in a very brief training program, learn to produce the standard comparative form of simple adjectives. However, there was no evidence of differential effectiveness of a deductive or inductive instructional sequence and thus the second hypothesis was neither confirmed or disproved.

Probably the most interesting finding is the implicit support to the position held by linguists that certain language competencies are part of

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the "intrinsic structure" which the child brings to his learning of language. This statement is based on the speed with which these children were able to acquire the appropriate verbalizations for the concepts; once the competence was translated into overt performance, it was retained and, to some extent, improved. On the other hand, the control group provided evidence that children do not produce these structures without either being exposed to them in their language environment or through formal learning situations.

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TABLE 1

Means and Standard Deviations on Peabody Picture Vocabulary
Pretest, and Posttest, by Treatments

N	<u>Deductive</u>		<u>Inductive</u>		<u>Control</u>	
	8		8		8	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Peabody Picture Vocabulary Test ^a	47.0	11.2	48.5	12.6		
<u>Pretest</u> ^b						
Selection	17.4	1.6	16.9	1.2	18.2	1.7
Verbal	0.9	1.3	2.1	3.3	1.9	2.6
<u>Posttest</u> ^b						
Selection	18.0	.8	19.0	.9		
Verbal	16.9	8.3	15.8	4.6		
<u>Transfer</u> ^c						
Selection	7.2	3.3	7.8	7.6		
Verbal	7.0	1.4	5.0	3.9		
<u>Posttest and Transfer</u>						
<u>Combined</u>						
Selection	25.2	3.5	26.9	.9		
Verbal	24.0	3.1	20.7	8.1		
<u>Retention</u> ^d						
Selection	27.6	1.5	29.2	1.0		
Verbal	18.4	7.9	21.6	7.5		

^aMental age given in months.

^bMaximum possible score was 20 points on each subtest.

^cMaximum possible score was 10 points on each subtest.

^dThe retention test combined the posttest and transfer test items, thus a maximum score of 30 was possible.



Figure 1. Example of Instructional Frame